

tridistichate species than occur in *Antedon*. I do not know any species of the latter genus with articulated radials in which there is a fourth post-radial axillary, such as occurs in *Actinometra alternans*, *Actinometra variabilis*, *Actinometra magnifica*, and *Actinometra bennetti*; and it is decidedly rare to find a third axillary; while the singular variations presented by *Actinometra belli* and *Actinometra nobilis* are altogether unknown in *Antedon*.

The above tables show that it is possible to make a preliminary classification of the species of Comatulæ by using the characters of their successive arm-divisions.

But how are we to deal with the seventy odd species of *Antedon* which have only ten arms, or with the thirty more which have bidistichate primary arms? The characters of systematic value which may be employed for this further classification are those of the cirri, arms, and pinnules. The number of the cirri themselves and also that of their component joints are very useful characters within certain limits. *Antedon valida* and *Antedon parvipinna*, which are both figured on Pl. XV., are obviously quite distinct specific types; and the same may be said of *Antedon alternata* and *Antedon incerta*, represented on Pl. XVIII., not only as regards the cirrus-characters, but with respect to the pinnules also.

The shape and the relative sizes of these latter organs, especially at the bases of the arms, often afford characters of much systematic value, as will be seen by comparing the flagellate lower pinnules of *Antedon quadrata* and *Antedon australis* (Pl. XXVII. figs. 8-16) with the stiffer ones of *Antedon occulta* and *Antedon variipinna* (Pl. XLVIII. figs. 2, 3); while those of *Antedon valida*, *Antedon incerta*, and *Antedon macronema* (Pl. XV. figs. 5, 6; Pl. XVIII. fig. 5; Pl. XXXVIII. fig. 4) are of an altogether different type from either of the others just mentioned.

Another very useful character for systematic purposes is to be found in the shape of the arm-joints. In one large group of *Antedon*-species the radial axillaries and the next few joints beyond them have their apposed sides much flattened, as is well seen in Pl. XV. fig. 6. In the absence of this very striking peculiarity, the shape of the arm-joints, as seen from the dorsal side, is often of much use in classifying species. Thus, for example, the elongated joints of *Antedon phalangium* (Pl. XXVIII. fig. 1), the short compressed triangular joints of *Antedon patula* (Pl. XLIII.), and the rounded joints of *Antedon variipinna* (Pl. XLIX. fig. 1) all afford good specific characters; while in the genus *Actinometra* the contrast is strong between the short discoidal joints of *Actinometra fimbriata* and the triangular ones of *Actinometra elongata* (Pl. LVII. fig. 2; Pl. LXII. fig. 3).

The condition of the ambulacra in the arms and pinnules is also of much use in classification. Thus, for example, *Antedon acæla*, *Antedon incerta*, *Antedon inæqualis*, and other forms have both side plates and covering plates on the pinnule-ambulacra, which are often better defined than in the Pentacrinidæ; while in other species, such as